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EXAMINER

KUMAR, PANKAJ

ART UNIT PAPER NUMBER

2631

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/239,871

Applicant(s)

CARROZZA ET AL.

Examiner

Pankaj Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/10/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34 and 35 is/are allowed.
- 6) ☒ Claim(s) 1, 5, 17 and 20 is/are rejected.
- 7) ☒ Claim(s) 2-4, 6-16, 18, 19 and 21-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. This is in response to amendment filed on 11/10/2003 in which claims 1-35 are still pending. Applicant's amendments have been fully considered but arguments are moot in view of the new grounds of rejection.

2. Since this case is not in condition of allowance, the applicant is requested to make the following changes that were discussed with Donald Stout on 1/20/2004.

3. In the claims:

Claim 16 line 2 should be changed to ---the memory comprises a write address---

Claim 16 lines 9-17 (from "the another memory..." to the end of the claim)
should be deleted

Claim 26 line 2 should be changed to ---addressing memory cells of the memory
by---

Claim 27 lines 3 should be changed to ---addressing memory cells of the memory-

Claim 28 line 2 should be changed to ---addressing memory cells of each memory
by---

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4. The above amendments were being made for the following reasons:

For claim 16 line 2 and claims 26, 27 and 28: The claims that claims 16, 26, 27 and 28 depend on only have one memory. The word 'further' was removed from claim 16 at applicant's request. The word 'further' is redundant in this claim since dependent claim 16 already inherently further depends on claims 1 and 5.

For claim 16 lines 9-17: deleted at applicant's request since this deletion does not add new matter.

Response to Amendment

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Sanders USPN 6,041,050.

3. As per claim 1, Sanders teaches a receiver comprising: an input in the receiver (Sanders fig. 2c: 7; paragraph 46: "The apparatus uses this determination to select a cell from an appropriate source to fill a cell slot in the "Send" context, or to present the contents of the current cell slot in the sequence to the appropriate sink(s) in the "Receive" context.") which receives a

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time division multiplexed (Sanders: title) signal containing a plurality of channels (Sanders fig. 5c has channels A, B, etc.) which has been transmitted from a transmitter (Sanders fig. 2c: 5 has been transmitted from a transmitter); a memory coupled to the input, including an addressable storage array which stores a sequence of data samples contained in the time division multiplexed signal from the plurality of channels (Sanders fig. 5c: right table) with each successive data sample belonging to a channel different than a channel to which an immediately preceding data sample belongs (Sanders fig. 5c: for example, second row of right table is from channel A, third row of right table is from a different channel) and outputs the stored data samples in a sequence of data groups equal in number to a number of the plurality of channels with each data group containing a plurality of samples from one of the plurality of channels (Sanders fig. 6: outputs of 36a to 36m which are collectively 19); and a decoder (Sanders fig. 17b: 92), responsive to the sequence of data groups (Sanders fig. 17b: 92 has 19 as its input), which decodes the data samples within the sequence of data groups and outputs decoded data samples of the plurality of data groups from the plurality of channels (Sanders fig. 17b: 95, 23).

4. As per claim 17, a method of data reception comprising: in a receiver receiving and storing a time division multiplexed signal transmitted from a transmitter containing a sequence of data samples from a plurality of channels with each successive data sample belonging to a channel different than a channel to which an immediately preceding data sample belongs; outputting the stored data samples in a sequence of data groups equal in number to a number of the plurality of channels, each data group containing a plurality of samples from one of the plurality of channels; decoding the data samples within the sequence of data groups; and

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outputting the decoded data samples of the plurality of data groups from the plurality of channels (discussed above with the rejection for claim 1).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanders in view of Linsky.

3. As per claim 5, Sanders teaches a receiver in accordance with claim 1. What Sanders does not teach is wherein the receiver is contained in a satellite. Linsky shows the receiver is contained in a satellite (Linsky: col. 3, fourth full paragraph). It would have been obvious to one skilled in the art at the time of the invention to modify Williams to include satellite. One would be motivated to do so since the elements of claims 17, 18 and/or 32 would make the satellite efficient.

4. As per claim 20. (Currently Amended) Sanders teaches a receiver in accordance with claim 17. What Sanders does not teach is wherein the receiver is contained in a satellite. Linsky shows the receiver is contained in a satellite (Linsky: col. 3, fourth full paragraph). It would have been obvious to one skilled in the art at the time of the invention to modify Williams to include satellite. One would be motivated to do so since the elements of claims 17, 18 and/or 32 would make the satellite efficient.

Allowable Subject Matter

5. Claims 34-35 are allowed.

6. Claims 2-4, 6-16, 18-19, 21-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The art of record does not suggest the respective claim combinations together and nor would the respective claim combinations be obvious with the underlined portions:

8. As per claim 2, a receiver in accordance with claim 1 comprising: a multichannel phase tracking which processes the data groups from the plurality of channels to output from each data group a group of most likely bits; and wherein the data samples each comprise orthogonally encoded data; and the decoder is a biorthogonal inner code soft decision data decoder which decodes groups of most likely bits.

9. As per claim 9, a receiver in accordance with claim 5 further comprising: a channelizer coupled to the input and to the memory, which is responsive to an input bandwidth and which divides the input bandwidth into a plurality of output channels each of equal bandwidth, one of the output channels comprising the time division multiplexed signal.

10. As per claim 13, a receiver in accordance with claim 1 wherein: the memory comprises a write address generator and a read address generator and the addressable storage array contains memory cells which are addressed by addresses generated by the write address generator and the read address generator, the sequence of data samples being written in a

group of memory cells with addresses generated by the write address generator, and the sequence of data groups being read out with addresses generated by the read address generator.

11. As per claim 16, a receiver in accordance with claim 5 wherein: each of the at least one memory further comprises a write address generator and a read address generator and the addressable storage array contains memory cells which are addressed by addresses generated by the write address generator and the read address generator, the sequence of data samples being written in a group of the memory cells with addresses generated by the write address generator and the sequence of data groups being read out with addresses generated by the read address generator; the another memory further comprises a write address generator and a read address generator and the addressable storage array contains memory cells which are addressed by addresses generated by the write address generator and the read address generator, the sequence of data samples being written in a group of the memory cells of the another memory with addresses generated by the write address generator and the sequence of data groups being read out from a group of memory cells of the another memory with addresses generated by the read address generator.

12. As per claim 18, a method in accordance with claim 17 wherein: performing multiphase tracking of the data groups from the plurality of channels to output from each group a group of most likely bits; and wherein the data samples each comprise orthogonally encoded data; and the decoder is an inner code soft decision biorthogonal decoder which decodes groups of most likely bits.

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13. As per claim 23, a method in accordance with claim 20 wherein: an input bandwidth from the transmitter is received by the receiver and is divided by the receiver with a channelizer into a plurality of output channels each of equal bandwidth, one of the output channels comprising the time division multiplexed signal.

14. As per claim 26, a method in accordance with claim 20 further comprising: addressing memory cells of each of the at least one memory by addresses generated by a read address generator and a write address generator, the sequence of data samples being written in a data group of memory cells by addresses generated by the write address generator and the sequence of data groups individually outputted from a group of memory cells being generated by addresses generated by the read address generator.

15. Claims 3-8, 10-12, 14-15, 30-31 are objected to since they depend on objected claim 2.

16. Claims 19-22, 24-25, 27-29, 32-33 are objected to since they depend on objected claim

18.

17. As per claim 34: a multiple channel phase tracking coupled to the time division multiplexed signal from the multiple channels which outputs sequentially groups of most likely bits and from hard decisions from multiple channels; a first memory, coupled to groups of most likely bits, which stores the groups of most likely bits from the multiple channels and outputs a sequence of data groups equal to a number of the multiple channels with each data group containing a plurality of samples from one of the multiple channels; an inner decoder, responsive to the sequence of data groups from the first memory, which outputs decoded data groups from the multiple channels; a second memory, coupled to the decoded data groups from the multiple channels and to the hard decisions from multiple channels, which stores the

decoded data groups and the hard decisions into data blocks which are sequentially output by the second memory; and an outer decoder which decodes the sequentially output data blocks from the second memory.

18. As per claim 35: the multiple channel phase tracking in response to the time division multiplexed signal from the multiple channels sequentially outputs groups of most likely bits and hard decisions from the multiple channels; storing with the first memory groups of most likely bits from the multiple channels and outputting a sequence of data groups equal to a number of the multiple channels with each data group containing a plurality of samples from one of the multiple channels; the inner decoder, in response to the output of data groups from the first memory, outputs decoded data groups from the multiple channels; the second memory in response to the decoded data groups and to the hard decisions, stores and sequentially outputs the decoded data groups and the hard decisions into data blocks; and the outer decoder, in response to the sequential output of the stored data blocks from the second memory, sequentially decodes the data blocks.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on Mon, Tues, Wed and Thurs after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (703) 306-3034. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

PK

TEMESGHEN GHEBRETISSAE
PRIMARY EXAMINER